

REMARKS

Favorable consideration of this application as presently amended is respectfully requested.

Claims 1-2 and 4-10 are pending in this application, with Claims 1-2 and 4-10 having been amended and Claims 3 and 11 having been cancelled by way of the present amendment.

In the Office Action of January 13, 2003, the specification and drawings were objected to; Claims 1-11 were rejected under 35 U.S.C. § 112, second paragraph; Claims 1 and 8-10 were rejected under 35 U.S.C. § 102(b) as being anticipated by Fermann et al. (U.S. Patent No. 5,818,630, hereinafter Fermann); and Claims 3-7 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fermann in view of the article "Spatial Mode Control of a Diode-Pumped Nd: YAG laser using an Intracavity Holographic Phase Plate" by Bourderionnet et al., hereinafter Bourderionnet.

In response to the objection to the specification, a substitute specification is attached herewith to comply with the arrangement requirement of 37 C.F.R. § 1.77(b). No new matter is added.

In response to the rejections under 35 U.S.C. § 112, second paragraph, Claims 1-2 and 4-10 are amended to correct the discrepancies noted in the Official Action and to more clearly describe Applicants' invention. Independent Claims 1 and 9 has been further amended to recite that the mode conversion device is a holographic device as recited in original Claims 3 and 11, respectively. No new matter is added.

Briefly recapitulating, amended independent Claim 1 is directed to a pumped fiber laser, comprising a multimode doped fiber having a first and second end; a holographic spatial mode conversion device configured to receive light from the multimode doped fiber;

and a monomode laser oscillator configured to transmit a monomode laser beam to the first end of said multimode doped fiber. Independent Claim 9 is directed to another embodiment of Applicants' invention wherein the laser includes a holographic mode conversion device. The laser recited in amended Claims 1 and 9 is able to produce high power beams with good beam quality to compact and efficient fibers.¹

Fermann discloses a method and apparatus for amplifying and compressing optical pulses in a multi-mode fiber including a mode converter (50).² Fermann does not, however, teach or suggest a *holographic* spatial mode conversion device as recited in Applicants' amended Claim 1. Thus, Applicants submit the inventions defined by amended Claim 1, and all claims depending therefrom, are not anticipated by Fermann for at least the reasons stated above.³

Bourderionnet discloses a method and apparatus for spatial mode control of a laser beam using an intra-cavity holographic phase plate.⁴ However, the device of Bourderionnet emits laser beams into the ether and does comprise the fiber disclosed in Fermann or the fiber as recited in Applicants' claimed invention. Applicants submit, in fact, it is impossible to simply replace the mode converter of Fermann with the intra-cavity holographic phase plate of Bourderionnet and then connect the intra-cavity holographic phase plate of Bourderionnet to the multi-mode fiber of Fermann to arrive at Applicants' claimed invention. As there is no teaching, suggestion, or motivation, either explicitly or implicitly, in either reference to combine the multi-mode fiber of Fermann with the intra-cavity holographic phase plate of

¹ Specification, page 1, lines 5-10.

² Fermann, abstract, Figures 5 and 6.

³ MPEP § 2142 "...the prior art reference (or references when combined) must teach or suggest **all** the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaack, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

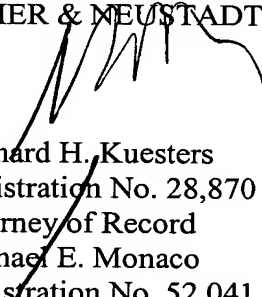
⁴ Bourderionnet, page 403, Figures 1-2.

Bourderionnet to arrive at Applicants' claimed invention, Applicants submit it is only through an impermissible hindsight reconstruction of Applicants' invention that the rejection of cancelled Claims 3 and 11 (now incorporated into Claims 1 and 9, respectively) can be understood.⁵

Accordingly, in view of the present amendment and in light of the previous discussion, it is respectfully submitted that the application is believed in condition for allowance and early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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⁵ MPEP § 2143.01 "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge of one of ordinary skill in the art."